NISTTech

Aluminum Hydroxides as Solid Lubricants

Better lubricant for high temperature oxygen-rich environments

Description

Solid lubricants are often used either alone or in conjunction with liquid lubricants to provide an easily sheared interface with reduced friction and wear between rubbing surfaces. For applications where graphite or molybdenum disulfide is inappropriate (e.g. oxygen containing environments at high temperatures, or if carbon, sulfur or molybdenum is undesirable), this invention provides for the use of aluminum hydroxides as solid lubricants for alumina, aluminum oxides, ceramics and other oxide materials. Aluminum oxide hydroxide (boehmite) and aluminum trihydroxides are preferred compositions for such lubricating purposes. In particular, the use of boehmite in an aqueous solution is described as a means to reduce frictional coefficients between contacting surfaces.

Applications

- **Reduces friction**
  Ideal for reducing friction between rubbing surfaces
- **Replaces graphite and molybdenum disulfide**
  Available for applications where graphite and molybdenum disulfide cannot be used as lubricants

Advantages

- **Versatile**
  Lubricates contacting surfaces of oxide materials in oxygen-rich environments even at high temperatures
- **Minimal friction**
  Provides a solid lubricant that reduces the frictional coefficients created between various types of contacting surfaces

Abstract

Aluminum hydroxides are used as solid lubricants for aluminum oxides, ceramics and other materials having oxide surfaces. Aluminum oxide hydroxides and aluminum trihydroxides are preferred compositions for such lubricating purposes. In particular, the use of boehmite in an aqueous solution significantly reduces frictional coefficients between contacting surfaces.

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References

- Expired U.S. Patent # 4,919,829
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Status of Availability

This technology is available in the public domain.

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